

Self-Efficacy, Motivation To Publish A Scientific Article And Research Culture In Peruvian University Students: A Correlational Study

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Abstract

Background Promoting research activity among university students requires considering internal and external factors that are essential for scientific production. In this context, the study aimed to establish relationships between self-efficacy, motivation to publish a scientific article, and research culture among university students.

Method The study employed a non-experimental, correlational design with a sample of 203 students selected via non-probability convenience sampling. Three instruments were used to collect data: The Research Culture Scale, the Research Self-Efficacy Scale, and the Motivation to Write Articles Scale. These instruments were adapted for the local context.

Results Spearman's Rho statistic identified moderate and significant positive relationships ($p < .01$) between the main variables. The research culture dimensions showed low correlation with the ethics and good practices dimension ($r = .166$, $p = .008$) and strong correlation with the habits and commitment dimension ($r = .595$, $p < .001$). The motivation variable revealed a strong relationship with self-efficacy ($r = .538$, $p < .001$).

Conclusion The practical implications of these findings in a university context are discussed, emphasizing that a strong research culture is associated with both motivation and self-efficacy. In other words, internal perceptions are a key driver of scientific production and contribute to strengthening the research culture within the student community.

Keywords: Culture, research, motivation, articles, ethics, education and culture, university.

INTRODUCTION

Research is a fundamental pillar in the academic and professional training of university students (Delord & Porlán, 2024). However, in the university context, research activity is often perceived as a complex and challenging process due to factors such as motivation and perceived self-efficacy (Calla-Vásquez et al., 2022; Bracho, 2011). This situation represents an obstacle to the strengthening of research culture and, consequently, to academic quality (Chauca et al., 2024; Serrano et al., 2024).

Intrinsic psychological capacities, such as motivation and self-efficacy, are closely related to student scientific production (Chávez, 2019). However, in Latin America, university scientific production remains low compared to institutions in the United States and Europe (González-Díaz et al., 2022). One of the main challenges of higher education in the region is the low interest of students in getting involved in research activities (Cruz et al., 2023).

In the Peruvian case, this reality is no different. Various studies show low rates of scientific production in university students, both in public and private institutions (Pares-Ballasco et al., 2024; Henao & Lis, 2023). One of the factors that has contributed to this is the implementation of the automatic baccalaureate, which has decreased the requirement to prepare research papers as a degree requirement (Ramírez-Aguilar et al., 2023). According to the Scimago Journal Rank (2025), Peru ranks fifth in the production of citable documents in Latin America between 1996 and 2024, with 71,189 publications, a figure well below countries such as Brazil (1,435,346), Mexico (481,535), Argentina (292,678), Chile (250,831) and Colombia (194,304). These data show a structural weakness in the national research culture (Esteban et al., 2024).

One of the causes of this low production lies in the fact that university students do not conceive of research as an essential component of their academic training (González et al., 2024; Rodríguez et al., 2021). In response to this situation, Peru has promoted programs such as the National Program for Scientific Research and Advanced Studies (Prociencia), led by Concytec, which seeks to strengthen the country's scientific and technological capacities (Concytec, 2021). However, these initiatives focus mainly on stimulating extrinsic motivation, leaving aside other psychological factors such as self-efficacy towards research, which also contribute to the strengthening of a sustainable research culture (Díaz-León, 2023; SUNEDU, 2020).

Strengthening self-efficacy and motivation is essential, since both psychological variables have been shown to be decisive in the development of research competencies in the academic field (Bandura, 1997; Deci & Ryan, 1985). Self-efficacy for research refers to the individual's perception of their ability to perform specific tasks, in this case, research activities (Santa-Cruz et al., 2023; Campos et al., 2023; Castro-Rodríguez, 2022). On the other hand, the motivation to publish a scientific article is understood from the self-determination theory of Deci and Ryan (1985), which distinguishes between intrinsic and extrinsic motivation to participate in research processes aimed at the publication of results (Moreno & Silveira, 2015; Mamani et al., 2023; Severino et al., 2024).

Likewise, research culture is conceived as the set of values, practices, attitudes, and knowledge shared by the academic community, which guide scientific work under ethical, methodological, and collaborative principles (Mamytbayeva et al., 2024; Rodríguez-Vargas et al., 2020; Tolozano-Benítez et al., 2024). This culture directly influences students' habits and good practices, as well as their participation in research hotbeds, spaces that promote scientific socialization and strengthen academic production (Veytia & Contreras, 2019; Vera-Fernández & Fernández-Nieto, 2023).

The promotion of university scientific communities requires the development of a solid research culture, which fosters practices consistent with institutional and ethical values, and which recognizes research as an essential activity for scientific and social progress (Gallardo & Duque, 2022; Montoya, 2019; Sánchez et al., 2023; Lutz, 2023). However, most studies on research culture adopt correlational approaches, exploring their relationship with factors such as motivation, pedagogical innovation, or interest in scientific publication (Obando, 2023; Mora & Olaya, 2023; Vera-Rivero et al., 2019; Lavado et al., 2024).

In terms of motivation, some studies have shown its influence on planning, continuous training, and resource management to conduct research (Ríos, 2021; Villegas & Alfonzo, 2017). However, there is still a theoretical gap regarding the integration of the three

variables—self-efficacy, motivation, and research culture—in a broad relational model that allows us to understand how they are articulated in the student community. Deepening this knowledge is essential to design strategies that increase university scientific production (Vera-Fernández & Fernández-Nieto, 2023), thus reducing the gap between academic training and knowledge generation (González-Díaz et al., 2022; Meregildo et al., 2020). In this context, the present study aimed to establish the relationships between self-efficacy, motivation to publish a scientific article and research culture in Peruvian university students.

METHODOLOGY

1.1 Study type and Design

A quantitative method was used that focused on the collection of numerical data and the application of statistical techniques for their evaluation. This study was correlational, and its design was non-experimental, with the purpose of analyzing the interrelationship between research motivation, self-efficacy in the research field and research-related culture. These variables are fundamental for the commitment, planning, execution and dissemination of scientific results.

1.2 Participants

The sample included 5400 students from a private university located in the city of Piura (Peru) during the year 2025. From this population, a non-probabilistic convenience sample was chosen consisting of 203 students, selected based on their accessibility and willingness to participate.

The sample distribution is presented in Table 1.

Table 1. Study sample distribution

Variables	Total (n=203)	
<i>Race by group</i>	<i>f</i>	% of Total
Accounting Sciences	2	1 %
Legal Sciences	27	13.3 %
Social sciences	135	66.5 %
Engineers and architecture	23	11.2 %
Bless you	16	7 %
<i>Sex</i>		
Female	133	66 %
Male	70	34 %
<i>Ages (years)</i>		
17 to 19 years old	26	12.8 %
20 to 22 years old	86	42.3 %
23 to 25 years old	62	30.5 %
26 to 29 years old	26	12.8 %
30 to 34 years old	3	1.4 %
<i>Study cycle group</i>		
I to III cycle	18	8.8%
IV to VI cycle	51	25.2%
VII to IX cycle	107	52.7%

X to XII cycle	27	13.3%
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The sample was mostly composed of students of Social Sciences (66.5%), followed by Law (13.3%) and Engineering and Architecture (11.2%). A smaller proportion of students from Health (7%) and Accounting (1%) participated. Regarding sex, two-thirds (66%) were women and one-third (34%) men. In terms of age, the majority (42.3%) were between 20 and 22 years old, while 30.5% were between 23 and 25 years old. Finally, more than half (52.7%) were in the seventh and ninth academic cycles.

1.3 Instruments

Three validated instruments were applied for the Peruvian context:

1. Scale of Research Culture.

Designed by the authors (2023–2024) with a sample of 600 university students. The validation process included three stages: content validity, reliability, and factorial invariance. Content Validity (7 judges): Aiken $V = 1.00$.

Exploratory and confirmatory factor analysis: adequate indices (CFI = 0.98; TLI = 0.98; RMSEA = 0.04; SRMR = 0.08).

Reliability ($\Omega = 0.889$), with values of 0.923 for Ethics and good practices dimension and 0.864 for Habits and commitment.

The results confirm the validity and internal consistency of the instrument.

2. Self-efficacy towards Research Scale.

Original by Castro-Rodríguez (2022), composed of 10 items. It was adapted to the local context through psychometric validation, eliminating item 8 ("I need supervision and periodic meetings to advance with my research") to improve the fitness of the model.

Adjustment indices: $X^2 = 21.363$; $df = 20$; CFI = 0.99; TLI = 0.99; RMSEA = 0.01; SRMR = 0.06.

Reliability ($\Omega = 0.839$), interpreted as good.

3. Scale of Motivation to Publish a Scientific Article.

Developed by Mamani-Benito et al. (2023), it consists of eight one-dimensional items. It was adapted for Piura students, verifying its internal structure.

Adjustment indices: $X^2 = 15.353$; $df = 20$; CFI = 1.00; TLI = 1.00; RMSEA = 0.00; SRMR = 0.05.

Reliability ($\Omega = 0.896$), considered high.

1.4 Data analysis

Descriptive and inferential techniques were applied using the open-source statistical software JASP 0.19.2. The internal structure of the instruments was verified by psychometric analysis, confirming adequate construct validity. Reliability was estimated with McDonald's Omega coefficient (Ventura-León & Caycho-Rodríguez, 2017), given the generic nature of the scales.

Subsequently, descriptive statistics were calculated (mean, standard deviation, asymmetry, kurtosis, minimum and maximum values) and the Shapiro–Wilk normality test, considered more powerful to evaluate the distribution of the data, was applied (Domínguez-Lara, 2018). Since the variables did not follow a normal distribution, nonparametric tests, specifically Spearman's Rho coefficient, were used to determine the correlations between the variables.

1.5 Procedures

The study was approved by the institution's ethics committee. Authorization was requested from the academic authorities and the research unit of the Piura branch. The instruments were administered through a Google Forms, which included informed consent, a socio-demographic file and research questionnaires.

The data were exported to a Microsoft Excel spreadsheet for further analysis. Compliance with the ethical principles of respect for people, confidentiality, voluntariness and originality was guaranteed.

RESULTS

The results obtained are presented below according to the nature of the study and the main objective of the study.

Table 2. Descriptive results of the variables.

Descriptive	Sto- cking	Standard devia- tion	Asymme- try	Kur- tosis	Shapiro p value	Min.	Max.
Research cul- ture Global scale	61.847	9.358	-0.363	0.031	0.002	33	80
D1 Ethics and good practices	48.335	7.854	-0.481	-0.327	<.001	25	60
D2 Habits and Engagement	13.512	3.528	-0.547	0.415	<.001	4	20
Self-efficacy to- wards research	29.123	5.52	-0.191	-0.012	0.003	14	45
Motivation to prepare a scien- tific article	27.256	6.435	-0.407	0.193	0.002	8	40

According to Table 2, the mean for research culture was 61 points, while for its ethics and good practices dimension it obtained a mean of 48.35 points and in the habits and commitment dimension it obtained a mean of 13.51. In the variable self-efficacy towards research, the mean was 29.12 and in motivation to prepare a scientific article, a mean of 27.25 was obtained. The level of significance in the Shapiro normality test indicates that the variables analyzed present non-normal distributions, with a general tendency towards negative asymmetry and high values. This indicates that most participants tend to report high levels of self-efficacy, research culture, ethics, research habits, and motivation to publish a scientific article. When determining that the data do not follow a normal distribution, it was decided to use a non-parametric statistic to determine the relationships between the variables through a non-parametric statistic, in this case Spearman's Rho.

Table 3. Multivariate statistical relationship between research culture, motivation and self-efficacy towards research

Variables	Total (n=203)			
	Re- search culture	D1 Ethics and good practices	D2 Habits and Engage- ment	Self-efficacy towards re- search

Self-efficacy towards research	Spearman's Rho	0.371**	0.166*	0.595**	—
	p	<.001	0.018	<.001	—
Motivation to produce articles	Spearman's Rho	0.458**	0.278**	0.568*	0.538**
	p	<.001	<.001	<.001	<.001

**p < 0.001; *p < 0.05

To identify the associations between the variables studied, Spearman's correlation coefficient was applied, since the normality tests indicated non-normal distributions. The results are presented in Table 3, where a moderate positive correlation is observed between self-efficacy towards research and the overall research culture ($\rho = .371$, $p < .001$), i.e., as the research culture improves, there is a slight increase in self-efficacy towards research. Meanwhile, in the dimensions of research culture, a low but significant correlation is identified with the dimension Ethics and good practices ($\rho = .166$, $p = .008$), and a strong correlation with the dimension Habits and commitment to research ($\rho = .595$, $p < .001$), which means that the latter has greater weight in the perception of self-efficacy. In the same way, it can be seen that the motivation to prepare scientific articles showed positive correlations with all variables. Its strong relationship with self-efficacy ($\rho = .538$, $p < .001$) stands out, suggesting that the more sense and beliefs of research competence, the higher the level of motivation to produce scientific articles. In summary, the findings reveal a pattern of significant associations between the study's key variables.

DISCUSSION

The main objective of this study was to determine the relationship between research culture, self-efficacy and motivation to publish a scientific article in Peruvian university students. The results showed positive and significant relationships between the three variables, which indicates that a solid research culture favors the perception of competence (self-efficacy) and enhances the motivation to prepare scientific articles.

This finding coincides with what was proposed by Bandura (1997) and Deci and Ryan (1985), who argue that motivation and self-efficacy are closely linked, since positive beliefs about one's own ability generate a greater disposition towards action. In this sense, a strengthened research culture promotes values, practices, and habits that affect the student's confidence to develop scientific processes, consolidating a more productive academic environment.

In the proposed model, research culture is conceived as an exogenous variable that promotes the creation of spaces for academic exchange, fostering collaboration and the collective construction of knowledge (Mamytbayeva et al., 2024; Rodríguez-Vargas et al., 2020). In this way, when students perceive that research is an essential part of university life, they feel more capable and motivated to participate in scientific projects (Gallardo & Duque, 2022; Montoya, 2019). Likewise, a strong relationship was observed between the dimension "habits and commitment" and the self-efficacy and motivation variables, suggesting that students with higher levels of self-efficacy tend to maintain persistent, planned, and achievement-oriented behaviors, even in the face of difficulty (Gómez et al., 2023; Castro-Rodríguez, 2022). These habits favor critical reading, the search for scientific information, and active participation in research spaces, key elements for consolidating research competence.

On the other hand, the dimension "ethics and good practices" showed a low but significant correlation with self-efficacy and motivation, indicating that students recognize the

relevance of ethical principles—such as originality, informed consent, and compliance with international standards (SUNEDU, 2020; Concytec, 2021)—but they tend to perceive them more as formal requirements than as intrinsic motivational factors. This finding reveals the need to reinforce ethical training from a practical and experiential perspective, which allows these values to be integrated as part of the process of scientific construction, not only as a normative requirement.

These results are consistent with previous studies that note structural weaknesses in the Peruvian university research culture, linked to the lack of resources, limited time, and the limited research training of faculty (González-Díaz et al., 2022; Ramírez-Aguilar et al., 2023; Díaz-León, 2023). Although there are institutional efforts such as Concytec's Prociencia program (2021), gaps persist between research promotion policies and their effective application in the classroom (Esteban et al., 2024).

The motivation to publish scientific articles showed a moderate relationship with research culture, indicating that the latter acts as a facilitating environment, but not necessarily as a determinant of motivational drive. This result coincides with Vera-Fernández and Fernández-Nieto (2023), who highlight that interaction in seedbeds and research groups generates shared training experiences that increase interest in publishing, but motivation also depends on personal factors, such as academic recognition or professional interest (Moreno & Silveira, 2015; Mamani-Benito et al., 2023).

From the perspective of self-determination theory (Deci & Ryan, 1985), this evidence confirms that beliefs about one's own competence and the perception of autonomy are key to sustaining intrinsic motivation towards research. In this study, the mean self-efficacy was higher than that of motivation and research culture, suggesting that students are confident in their ability to research, but still require greater institutional stimulation to convert that self-confidence into effective scientific production (Campos et al., 2023).

These results coincide with research that associates motivation and research culture with academic production (Obando, 2023; Lavado et al., 2024). To the extent that students perceive themselves as capable and supported by an institutional environment that values research, they are more likely to develop sustained publishing habits (Ríos, 2021; Villegas & Alfonso, 2017).

However, the study has limitations. The use of non-probability sampling restricts the generalization of the results to other populations. Also, as it is a cross-sectional design, the data reflect only a specific moment and do not allow causality to be inferred. In addition, the overrepresentation of students from social and female careers could bias the results. Future research should consider probabilistic sampling, longitudinal designs, and a more balanced representation by study areas, which would help to reinforce the external validity of the findings.

Despite these limitations, the results offer relevant practical implications for higher education institutions. It is evident that the research culture plays an essential role in strengthening self-efficacy and motivation. Consequently, universities must implement training and psychoeducational strategies that promote these factors, such as the creation of seedbeds, mentoring, research support programs, and workshops on ethics and scientific publication (Veytia & Contreras, 2019; Vera-Fernández & Fernández-Nieto, 2023).

In addition, the use of valid and reliable instruments represents a methodological strength that allows the study to be replicated in other university contexts. Therefore, it is recommended to include institutional programs aimed at the development of research self-efficacy from the first training cycles, which could favor a sustainable research culture, capable of closing the gap between academic training and the generation of scientific knowledge (González-Díaz et al., 2022; Meregildo et al., 2020).

CONCLUSION

The findings of the study made it possible to identify moderate and positive connections between research culture, self-efficacy in this field, and motivation to create scientific articles. This result indicates that a robust research culture not only improves the perception of competence in research, but also stimulates interest and willingness to generate academic papers.

The dimension related to "habits and commitment" showed a strong connection with self-efficacy and motivation, which shows that active participation in research activities – such as reading scientific articles, writing reports or collaborating on projects – is the main driver of progress of these psychological variables. On the other hand, the dimension "ethics and good practices" exhibited a weak relationship, which indicates that knowledge of formal standards, although essential for methodological rigor, is not a sufficient incentive on its own to strengthen self-efficacy or research motivation.

The results indicate that the research culture in universities is influenced by both internal and external factors. While internal motivation fosters curiosity and the desire to learn, external motivation and support from the institution reinforce persistence and publication of results. In this context, higher education institutions must develop strategies that combine both approaches, creating spaces for accompaniment by teachers, research hotbeds and scientific mentoring programs that strengthen self-confidence and continuity in research work.

Similarly, it is advisable to implement research training programs from the first years of university, using a comprehensive approach that promotes the development of research, ethical and methodological skills. It is also crucial to promote institutional policies that stimulate the publication of student papers, offering academic recognition and dissemination opportunities in indexed journals.

Finally, it is suggested that future studies deepen the analysis over time of these variables, to understand how self-efficacy, motivation and research culture evolve during the educational process. In addition, it would be useful to investigate the mediating role of variables such as academic tutoring, teachers' self-efficacy and the availability of technological resources.

In summary, the study provides valuable empirical evidence on the relationship between psychological and contextual factors in scientific production in the university environment. Strengthening the research culture not only implies teaching research, but also training motivated, competent individuals who are ethically committed to the creation of knowledge.

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Author contributions

Authors who contributed to the study conception and design: A.N., A.R., A.C., S.P., F.R., C.J., and A.V. Material preparation, data collection, and analysis were performed by A.N., A.R., A.C., S.P. The first draft of the manuscript was written by A.N., A.R., A.C., S.P., and authors F.R., C.J., and A.V commented on previous versions of the manuscript. A.V contributed to the revision of the article, offering important insertions and modifications in the introduction and discussion, as well as the implications and conclusions. All authors A.N., A.R., A.C., S.P., F.R., C.J., and A.V read and approved the final manuscript.

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Data availability

The datasets generated during and/or analyzed during the current study are not available due to confidentiality issues related to public security.

Declarations**Consent to participate**

Informed consent was obtained from all individual participants included in the study.

Competing interest

The authors declare that they have no competing interests.

AI Use Statement

The researchers state the use of AI, specifically OpenAI's ChatGPT, as redaction verification tools. However, it is an original work whose data, interpretation of results and inferences did not require these tools. The entire manuscript has been reviewed and approved by the research team, maintaining ethical criteria such as originality, transparency and veracity.

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